Trend Study 10R-15-00

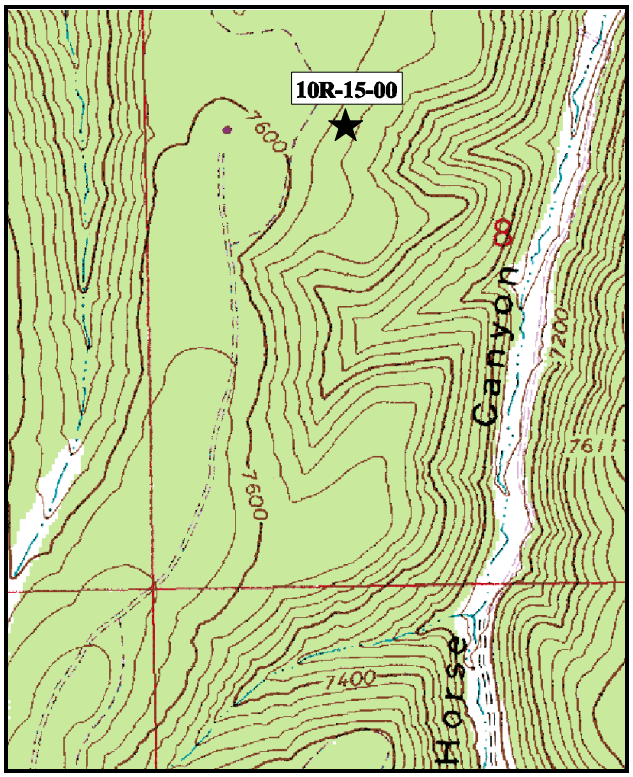
Study site name: Saddle Horse . Range type: Mountain Brush.

Compass bearing: frequency baseline 40°M.

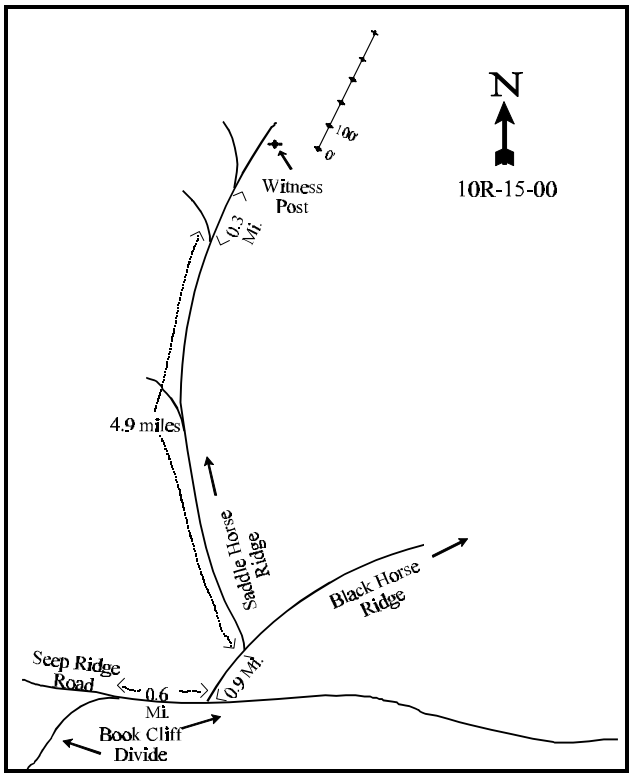
Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1(11ft), line 2(34 ft), line 3(59 ft), line 4(71 ft) line 5 (95 ft).

LOCATION DESCRIPTION

From the intersection of Seep Ridge road and Book Cliffs Divide road, continue 0.6 miles to an intersection with the road to Black Horse Ridge. Turn left here and go 0.9 miles to the intersection with the road to Saddle Horse Ridge. Go left here and continue 5.2 miles to the third fork (staying right through two forks). From the third fork the witness post is approximately 200 feet on the right side of the road. From the witness post the 0' stake is 43 paces at 100°M.



Map name: Seep Canyon



Diagrammatic Sketch

Township 15 S , Range 24 E , Section 8 .

UTM 4376915.643 N, 649791.738 E

DISCUSSION

Trend Study No. 10R-15

The Saddle Horse trend study was established in 1998. It samples a 1960's chaining on Saddle Horse Ridge which is between PR Canyon and Black Horse Canyon. The site now supports a mixed mountain brush community. It has a slope of 8% to 11%, a southeast aspect, and an elevation of about 7,540 feet. The area is used moderately heavy by elk, but there is little cattle use here since there is no available water on the ridge. There are plans to pipe water to a trough about 1/4 of a mile from the study site. Pellet group data from 1997 estimated 78 elk, 11 deer and 6 cow days use/acre (193 edu/ha, 27 ddu/ha and 15 cdu/ha). Use was lower in 2000 with 36 elk and 15 deer days use/acre estimated (89 edu/ha and 37 ddu/ha). Rabbit droppings were also common. Season of use for big game appears to be fall, spring and early summer.

Soil on the site is moderately deep with an effective rooting depth estimated at just over 16 inches. It has a sandy clay loam to sandy loam texture with a neutral pH. Phosphorus may be limiting at 8.4 ppm, as values less than 10 ppm may limit normal plant growth and development. Rock and pavement are not abundant on the surface, but widely variable sized rocks are found throughout the soil profile. Calcium carbonate deposits are common on rocks within the soil, some up to 1/4 inch thick. Erosion does not appear to be a problem. There is some minor soil pedestaling observed around shrubs but vegetation and litter cover are adequate to prevent significant erosion.

The site supports a variety of browse, with the key species being mountain big sagebrush, true mountain mahogany, and bitterbrush. Mountain big sagebrush is the most abundant shrub with a current (‘00) density of 1,080 plants/acre. It is mostly lightly browsed, in good vigor, and has low percent decadence. Sagebrush is not the preferred shrub in this area due to the apparent season of use for big game (spring/fall). The key shrub with respect to abundance and preference is bitterbrush. It provides about 1/3 of the total shrub cover with a current (‘00) density of 800 plants/acre. Bitterbrush has a prostrate spreading growth form with an average height of only 18 inches and a crown diameter of 4 to 5 feet. It displayed moderate to heavy use in 1997, increasing to mostly heavy use in 2000. Even at this level of use, vigor is normal on most plants, and percent decadence is low. During the 2000 reading, bitterbrush was producing abundant flowers and seed. However, leader growth appeared to be stunted, averaging only about one inch.

The second most preferred browse species is true mountain mahogany. They are large shrubs and even at a low density of 60 plants/acre in 2000, they still provide 12% of the total shrub cover. Average height of mature mahogany is about 4 ½ feet making them partly unavailable to browsing. Use was judged moderate to heavy in 1997 and just moderate in 2000.

Other shrubs encountered include rubber rabbitbrush, snowberry, and released pinyon and juniper trees. Point-center quarter data from 2000 estimated 99 pinyon, 128 Utah juniper, and six rocky mountain juniper trees/acre. Average basal diameter of pinyon is just under two inches, while that of the juniper is about 3 ½ inches. These trees currently (‘00) provide 33% of the total shrub cover. Overhead canopy cover averages 5%.

The herbaceous understory provides nearly as much cover as the shrubs do. Several grass species are found on the site but only two are common. The dominant species is intermediate wheatgrass which provided 82% of the grass cover in 1997 and 90% in 2000. Carex is also common. Forbs are not abundant and do not provide much additional forage. The most common species are Watson penstemon and scarlet globemallow. Some of the grasses and forbs showed light utilization in 2000.

1997 APPARENT TREND ASSESSMENT

The soil is well protected with abundant vegetation and litter cover with no sign of significant erosion occurring. The key browse, mountain big sagebrush, mahogany and bitterbrush, appear to have stable populations. Use is heavy on mahogany and moderate to heavy on bitterbrush, but vigor is normal for both species and percent decadence is low. Mountain big sagebrush is only lightly browsed, in good vigor and has no decadent plants. Recruitment is also good with nearly half of the population consisting of young plants. The herbaceous understory is dominated by intermediate wheatgrass. Forbs are diverse but most species occur only occasionally.

2000 TREND ASSESSMENT

Trend for soil is down slightly. Percent cover of vegetation has declined and bare ground has increased. In addition, cover and frequency of perennial grasses and forbs has also declined. The proportion of bare soil to protective cover (vegetation, litter and cryptogams) has also decreased. However, there still appears to be adequate protective ground cover to prevent serious erosion. Trend for the key browse species, mountain big sagebrush, true mountain mahogany and bitterbrush is considered stable. Mahogany and bitterbrush show moderate to heavy use but normal vigor and low percent decadence. Mountain big sagebrush does not appear to be as preferred. It displays mostly light use, good vigor and low decadence. Trend for the herbaceous understory is down slightly due to a decline in the sum of nested frequency of perennial grasses and forbs. Of the six perennial grasses sampled in 1998, four species declined significantly.

TREND ASSESSMENT
soil - slightly down (2)
browse - stable (3)
herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --
Herd unit 10R, Study no: 15

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'98	'00	'98	'00	'98	'00
G	Agropyron cristatum	16	*-	5	-	.19	-
G	Agropyron intermedium	332	*321	90	92	16.06	12.37
G	Bromus tectorum (a)	29	*-	8	-	.23	-
G	Carex spp.	63	53	25	23	1.82	1.10
G	Oryzopsis hymenoides	14	*3	4	1	.48	.00
G	Poa fendleriana	29	18	11	6	.40	.30
G	Sitanion hystrix	18	*-	9	-	.38	-
Total for Annual Grasses		29	0	8	0	0.23	0
Total for Perennial Grasses		472	395	144	122	19.36	13.78
Total for Grasses		501	395	152	122	19.59	13.78
F	Antennaria rosea	6	*3	4	2	.19	.06
F	Arabis spp.	11	6	5	2	.02	.01

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'98	'00	'98	'00	'98	'00
F	Astragalus convallarius	4	-	3	-	.04	-
F	Astragalus spp.	3	-	3	-	.07	-
F	Erigeron spp.	-	-	-	-	.00	-
F	Lappula occidentalis (a)	15	*3	7	1	.10	.00
F	Machaeranthera grindelioides	2	2	1	1	.03	.03
F	Penstemon caespitosus	3	-	1	-	.03	-
F	Penstemon pachyphyllus	-	*11	-	5	-	.08
F	Penstemon watsonii	39	*8	17	3	.56	.45
F	Senecio multilobatus	3	4	2	2	.04	.01
F	Sphaeralcea coccinea	35	28	15	13	.71	.14
F	Tragopogon dubius	2	-	1	-	.00	-
F	Viguiera multiflora	3	1	1	1	.03	.03
Total for Annual Forbs		15	3	7	1	0.10	0.00
Total for Perennial Forbs		111	63	53	29	1.73	0.81
Total for Forbs		126	66	60	30	1.84	0.81

* Indicates significant difference at % = 0.10

BROWSE TRENDS --
Herd unit 10R, Study no: 15

Type	Species	Strip Frequency		Average Cover %	
		'98	'00	'98	'00
B	Amelanchier utahensis	1	0	.00	-
B	Artemisia tridentata vaseyana	36	24	4.28	3.15
B	Cercocarpus montanus	10	3	2.29	2.12
B	Chrysothamnus nauseosus hololeucus	2	2	.30	.06
B	Chrysothamnus viscidiflorus viscidiflorus	1	1	-	-
B	Juniperus osteosperma	6	5	4.44	3.50
B	Opuntia fragilis	2	3	.38	-
B	Pinus edulis	7	7	1.37	2.27
B	Purshia tridentata	26	28	6.08	5.57
B	Symphoricarpos oreophilus	2	1	.15	.66
Total for Browse		93	74	19.33	17.34

CANOPY COVER --
Herd unit 10R, Study no: 15

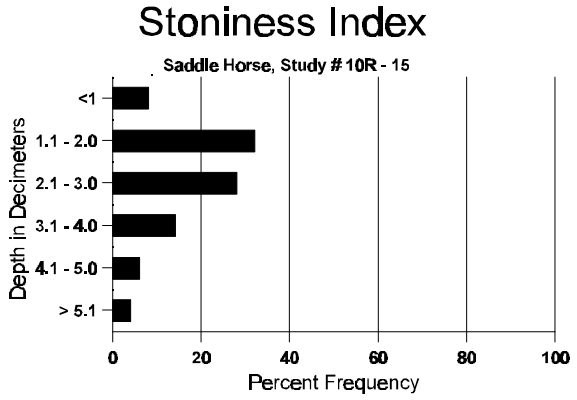
Species	Percent Cover	
	'98	'00
Cercocarpus montanus	-	.80
Juniperus osteosperma	3	2
Juniperus scopulorum	-	2
Pinus edulis	-	1

BASIC COVER --
Herd unit 10R, Study no: 15

Cover Type	Nested Frequency		Average Cover %	
	'98	'00	'98	'00
Vegetation	384	352	41.13	34.22
Rock	102	117	3.09	4.38
Pavement	176	157	2.00	1.38
Litter	487	463	57.48	56.59
Cryptogams	21	42	.20	.83
Bare Ground	245	289	16.27	21.62

SOIL ANALYSIS DATA --
Herd Unit 10R, Study # 15, Study Name: Saddle Horse

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
16.5	61.0 (16.8)	7.0	52.7	26.7	20.6	4.5	8.4	70.4	.9



PELLET GROUP FREQUENCY --
Herd unit 10R, Study no: 15

Type	Quadrat Frequency		Pellet Transect			
			Pellet Groups per Acre		Days Use per Acre (ha)	
	'98	'00	'98	'00	'98	'00
Rabbit	6	52	305	409	N/A	N/A
Elk	30	29	1018	470	78 (193)	36 (90)
Deer	14	15	148	200	11 (28)	15 (38)
Cattle	1	-	70	-	6 (14)	-

BROWSE CHARACTERISTICS --
Herd unit 10R, Study no: 15

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
Y	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing			Moderate Use		Heavy Use		Poor Vigor								%Change			
	'98		00%		00%		00%											
	'00		00%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)													'98		40	Dec:		-
													'00		0			-
Artemisia tridentata vaseyana																		
S	98	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	98	29	-	-	5	-	-	-	-	-	34	-	-	-	680			34
	00	19	-	-	2	-	-	-	-	-	21	-	-	-	420			21
M	98	35	5	-	-	-	-	-	-	-	40	-	-	-	800	30	43	40
	00	26	5	-	-	-	-	-	-	-	31	-	-	-	620	23	33	31
D	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
% Plants Showing			Moderate Use		Heavy Use		Poor Vigor								%Change			
	'98		07%		00%		00%								-27%			
	'00		09%		00%		00%											
Total Plants/Acre (excluding Dead & Seedlings)													'98		1480	Dec:		0%
													'00		1080			4%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus montanus																		
M	98	-	5	8	-	-	-	-	-	-	13	-	-	-	260	52	50	13
	00	-	1	-	-	2	-	-	-	-	3	-	-	-	60	54	54	3
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	38%	62%	00%	-77%
'00	100%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'98	260	Dec:		-
'00	60			-

Chrysothamnus nauseosus hololeucus																		
Y	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20	17	19	1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	17	19	1
D	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	00%	00%	+ 0%
'00	00%	00%	50%	

Total Plants/Acre (excluding Dead & Seedlings)				
'98	40	Dec:		0%
'00	40			50%

Chrysothamnus viscidiflorus viscidiflorus																		
M	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40	19	20	2
	00	-	1	-	-	-	-	-	-	-	1	-	-	-	20	11	14	1
D	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	1	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	00%	00%	+ 0%
'00	100%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'98	40	Dec:		0%
'00	40			50%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus osteosperma																		
Y	98	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
	00	5	-	-	-	-	-	1	-	-	6	-	-	-	120			6
M	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
D	98	-	-	1	-	-	-	-	-	-	-	-	1	-	20			1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	13%	13%	+11%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'98	160	Dec:		13%
'00	180			11%

Opuntia fragilis																		
M	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40	5	29	2
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60	3	13	3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	00%	00%	+33%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'98	40	Dec:	-
'00	60		-

Pinus edulis																		
Y	98	4	-	-	-	-	-	-	-	-	3	-	1	-	80			4
	00	5	-	-	1	-	-	-	-	-	6	-	-	-	120			6
M	98	3	-	-	-	-	-	-	-	-	3	-	-	-	60	-	-	3
	00	-	-	-	2	-	-	-	-	-	2	-	-	-	40	-	-	2
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	00%	14%	+13%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'98	140	Dec:	-
'00	160		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
S	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	98	8	3	-	2	-	-	-	-	-	13	-	-	-	260			13
	00	-	2	1	-	-	2	1	-	-	6	-	-	-	120			6
M	98	11	13	9	1	2	-	-	-	-	34	2	-	-	720	23	58	36
	00	-	1	4	4	2	16	2	-	-	29	-	-	-	580	18	51	29
D	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	1	1	2	-	-	1	4	-	-	1	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	37%	18%	00%	-18%
'00	15%	65%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'98	980	Dec:	0%
	'00	800		13%

Symphoricarpos oreophilus																		
M	98	1	-	-	1	-	-	-	-	-	2	-	-	-	40	44	68	2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	27	59	0
D	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	1	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	00%	00%	-50%
'00	00%	00%	100%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'98	40	Dec:	0%
	'00	20		100%